

NOTES ON AUSTRALIAN MARINE ALGAE. VI.

DESCRIPTIONS OF SIX NEW SPECIES.

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(Plates xxiii-xxvii.)

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GELIDIUM RECTANGULARE, n. sp. Plate xxiii, fig. 1.

Gelidium, caule compresso distiche pinnate decomposito, ramis bipinnatis elongatis; pinnulis rectangulariter emergentibus a margine pinnae, oppositis pectinatis linearibus rigidis, a marginibus foliola tetrasporangifera minuta seriata ferentibus. Caulis filis interioribus dense farctus. Color obscure purpurascens.

Base scutiform, disk with a plexus of lobes spreading over the rock surface.

Stem compressed, about 2 mm. wide, naked in lower third or with scattered irregular branchlets, above with long spreading distichously spreading branches. Height of plant to 30 cm. or more. Rami flat distichously bipinnate. Ultimate pinnules numerous, opposite, pectinate, arising from the margins of the pinna at right angles, rigid, about 5 mm. long, linear, more or less obtuse.

Tetrasporangia scattered over median area of tiny folioles springing in series from the margins of the ultimate pinnules. Folioles distinctly pedunculate irregularly ovate-oblong, not longer than the diameter of the pinnule.

Stem composed of two layers, the inner three-fifths of fine colourless fibres, longitudinal and oblique, densely packed, including in the meshes occasional coloured cells and granulated branches, the outer of densely packed rounded coloured cells in more or less regularly vertical series, the outermost minute.

Colour dark purpurascens.

Structure rigid cartilaginous. Does not adhere to the paper.

Habitat.—Flinders Bay near Cape Leeuwin (Lucas) and Point Le Hunt, and Clare Bay at the head of the Great Australian Bight (Dr. G. A. Chambers).

In the absence of plants bearing cystocarps one has to rely on the habit in assigning this species to *Gelidium* rather than to *Pterocladia*. Both genera occur in Australian waters.

At first I thought that I had in hand plants of *G. asperum* (Mert.) J. Ag. I sent specimens to Prof. H. Kylin, who courteously compared them with those so labelled in the Agardhian Herbarium at Lund. He has informed me that "it is not at all *G. asperum* J. Ag., which has quite another habitus. I think it to be a new species."

The habitat of the genuine *G. asperum* (Mert.) J. Ag. seems to be somewhat mysterious. De Toni gives "In oceano Australi ad Novam Hollandiam (Labilardière); ad 'Port St. Philippe' (Malm); ad Novam Zelandiam (Baume)." There are no examples of it in the Melbourne Herbarium, which contains Sonder's Herbarium and Bracebridge Wilson's collections, nor have I ever seen it on my own collecting expeditions. R. M. Laing does not admit it into his Reference List of New Zealand Algae, and writes me that he knows nothing of it in New Zealand. Can it be, as De Toni suggests, a form of *G. glandulataefolium*? He says: "Planta

fertilis in parte sterili nullos denticulos offert sed partes inermes etiam in sterili planta adsunt. Fertilis ad *Gelidium glandulaefolium* summopere adproximatur nisi cum eo eandem speciem sistit."

PTEROCLADIA PECTINATA, n. sp. Plate xxiii, fig. 2.

I forwarded sterile examples of this plant to Mrs. E. S. Gepp of the British Museum, and it was described in the *Journal of Botany*, 1906, by A. and E. S. Gepp. In my notes accompanying the specimens I wrote "Only obtained from deeper water when cast up by storms. I am inclined to put it down as a deeper growing, vegetative form of *P. lucida*. As far as I can make out, the structure of the frond is similar." This view was accepted by the Gepps, and the plant described by them as *Pterocladia lucida* (R. Br.) J. Ag.

"Forma *pectinata*, f. nov. Fronde compressa anguste elongata distiche a basi pectinato-pinnata (alioqui parce ramosa ramis pectinatis) ramulos copiosos patentes lineares acuminatos inter sese spatiis latitudini eorum aequalibus separatos gerente."

Having some years later gathered plants in the same locality bearing cystocarps, I would add to the above

frondibus cystocarpiferis sterilibus similibus, pinnulis cystocarpia terminalia ferentibus

and the whole will constitute the description of a new species, *Pterocladia pectinata*.

These cystocarps are quite unlike those of *P. lucida*, which are formed in the middle of the pinnules, while those in this form are terminal.

The cystocarps, too, of *P. pectinata* contain large spores, while those of *P. lucida* enclose much branched slender gonimoblastic threads bearing at the extremities of the branches minute spores. Hence it seems necessary to give to this "form" the status of a distinct species.

My idea that the elongated slenderer plants were vegetative was disproved by the occurrence of plants distinguishable from the sterile plants only by the presence of numerous, all terminal, cystocarps.

Habitat.—Maroubra Bay on an ocean beach between Port Jackson and Botany Bay. Found by me cast up in the month of July, 1901 and 1910.

Professor Kylin, to whom I recently sent an example, writes me: "Your *Pterocladia lucida*, I think, is better to describe as a new species. In J. G. Agardh's Herbarium there is a specimen which quite agrees with yours, but this is labelled as a variety of *Pt. lucida* and does not look like the type forms."

NITOPHYLLUM (MYRIOGRAMME?) PERRINAE, n. sp. Plate xxiv.

Stipites gregarii, e disco parvulo surgentes, robusti, subcylindracei sensim compressi, mox in 2-6 ramos primarios abeuntes. Inferior pars rami, ut in stipite, nuda, robusta, sensim compressa, in folium transiens, vel in duo pluresve similes ramos secundarios ipsos in folia transientes divisa. Folia ad 12 cm. alta, 4 ad 10 cm. lata, late ovata, querciformia, undulata, profunde lobata, tenuiter membranacea. Apices loborum rotundata, obtusa; margines integri vel irregulariter minute dentati; costa prominens nervos validos pluries subdivisos in membranam mergentes emittens; membrana plerumque monostomatica. Cellulae membranae subaequales pentagonales, nervorum elongatae rectangulares. Neque cystocarpia nec tetrasporangia adhuc visa. Frons ad 15 cm. altus. Color roseus.

Attachment.—Plants growing in clumps, each stipe with an unexpanded simple disk at the base.

Stipes.—Stout, subcylindrical, gradually compressed, 8–11 mm. long, to 3 cm. broad, soon dividing into 2–6 divergent primary rami.

Rami.—Primary stout, similar to stipes, becoming gradually compressed, the lower 3 cm. naked, then forming a foliar expansion or again dividing into two or more flattened secondary branches. Each ultimate branch passes sensibly into an ovate folium.

Fronde.—Folia to 12 cm. long, 4 to 10 cm. wide, broadly ovate, querciform, deeply lobed with undulate borders, thin membranaceous, of a rose-carmine colour. Apices of lobes rounded, obtuse. Margins nearly entire or with small irregular teeth. Midrib tough, broad below, narrowing upwards, flesh-coloured, giving off numerous nerves or branches which continue to subdivide by alternate not dichotomous branching, the ultimate divisions merging in the membrane. Cells roughly pentagonal, those of the nerves elongate rectangular.

No cystocarps or tetrasporangia seen. Height of plant to 15 cm.

Habitat.—Growing on rocky bottom at 4–8 fathoms in the River Tamar, near Georgetown. Gathered in January by Mrs. F. Perrin and A. H. S. Lucas.

Dedicated to my co-worker, Mrs. F. Perrin, of Launceston, Tasmania.

CHAMPIA INSIGNIS, n. sp. Plate xxv, fig. 1.

Fronde singulae vel plures ad lapillos et conchas disco lobato affixae, in circuitu late ovatae, compressae, bi-tri-pinnatae.

Rachis primaria basi valde attenuata, in medio expansa, sensim in apicem obtusiusculam attenuata, per totam frondem conspicue persistens, ad 18 cm. longa, ad 5 mm. lata.

Rami primarii basi tenuiter pedunculati, compressi, distiche alternantes, 5–6 mm. distantes, in apicem minus obtusam attenuati. Dissepimenta conspicua: articuli diametro breviores, ramulosum subaequales, ad genicula, nisi plantae fructiferae, haud conspicue constricti.

Cystocarpia supra paginas sparsa. Tetrasporangia triangule divisa, numerosa, sparsa, circ. 80 μ diametro. Antheridia invisae. Color laete purpureus. Substantia gelatinoso-succosa: planta ad chartam arcte adhaeret.

Hab. in aestuario fluminis Derwent Tasmaniae, in mense Octobri.

Fronde growing singly or in clusters attached to pebbles or shells by a lobed disk; of a broadly ovate outline, compressed, bi-tri-pinnate, the main rachis conspicuously persistent.

Rachis attenuated at base, expanding and then contracting again less markedly to the rather obtuse apex. Length to 18 cm., breadth to 5 mm.

Primary branches alternate, distichous, 5–6 mm. distant, with a thin linear peduncle, expanded in the middle and slowly tapering to a more pointed apex.

Length to 10 cm., breadth 3–5 mm. Length of secondary branches to 2 cm.

Dissepiments conspicuous. Joints of rachis and primary branches shorter than broad, of secondary about as long as broad, not conspicuously constricted at the genicula, more obviously so in fruiting plants.

Cystocarps scattered on the faces of the secondary branches, not numerous in plants seen. Tetrasporangia triangularly divided, scattered abundantly over the secondary and tertiary branches.

Colour a bright purple. Substance gelatinous succose; plant adheres closely to paper.

Habitat.—Estuary of the River Derwent, Tasmania. Gathered in the month of October.

The species is distinguished from *C. tasmanica* by the much larger scale of the parts, its more open spacing and the bright purple colour.

LESSONIA CORRUGATA, n. sp.

Stipes inferne subteres, mox complanatus, superne planus, plerumque sexiense dichotome ramosus, infra dichotomias cuneatim dilatatus, ramulis ultimis laminae geminatas ferentibus. Vesiculae nullae. Laminae planae angustae praelongae lineari-ensiformes, inferne superneque attenuatae, conspicuis costis rugulosae, margine aculeis alternis robustis munito. Color olivaceus.

A robust bushy plant with strong scutiform attachment growing in association with *Mucrocystis* on a rocky bottom. The stipes, not stouter than the little finger, subterete below but soon becoming compressed and then broadening and flat, subdividing by some half-dozen dichotomies, the last branches splitting into twin laminae. There is a cuneate widening of the stem below each dichotomy. There are no vesicles. The laminae are attenuated at each end, 3 feet or more long, and less than an inch wide, linear-ensiform, the surface conspicuously rugose with parallel longitudinal ribs, five or more in number, running the length of the frond, and the margin furnished with alternate stout flattened hooked aculei, 5 mm. long, with broad bases. The colour olive, often with a greenish tinge.

No *Lessonia* has been hitherto recorded from Australia or Tasmania. Our species is quite unlike the New Zealand species *L. variegata* J. Ag. Mr. R. M. Laing, to whom I submitted a specimen, writes me: "We have nothing like it." Our plant differs from all others previously described by the strongly ribbed surface and the well-developed stout marginal prickles.

I obtained the plant by dredging in 4-5 fathoms in Port Arthur, and gathered younger ones in deep rock pools at Southport. It probably occurs all round the South Coast of Tasmania.

CAULERPA ANNULATA, n. sp. Plate xxvii, fig. 1.

Frondes a surculo repente, continuo, glabro, satis robusto nec rachidibus crassiore, erectae.

Rachides ad 17 cm. altae, simplices vel semel bisve furcatae, 3-4 mm. crassae, omnino a basi ima annulato-constrictae, glabrae. Segmenta ramentis geminis subapice surgentibus, distiche positae, a basi induta.

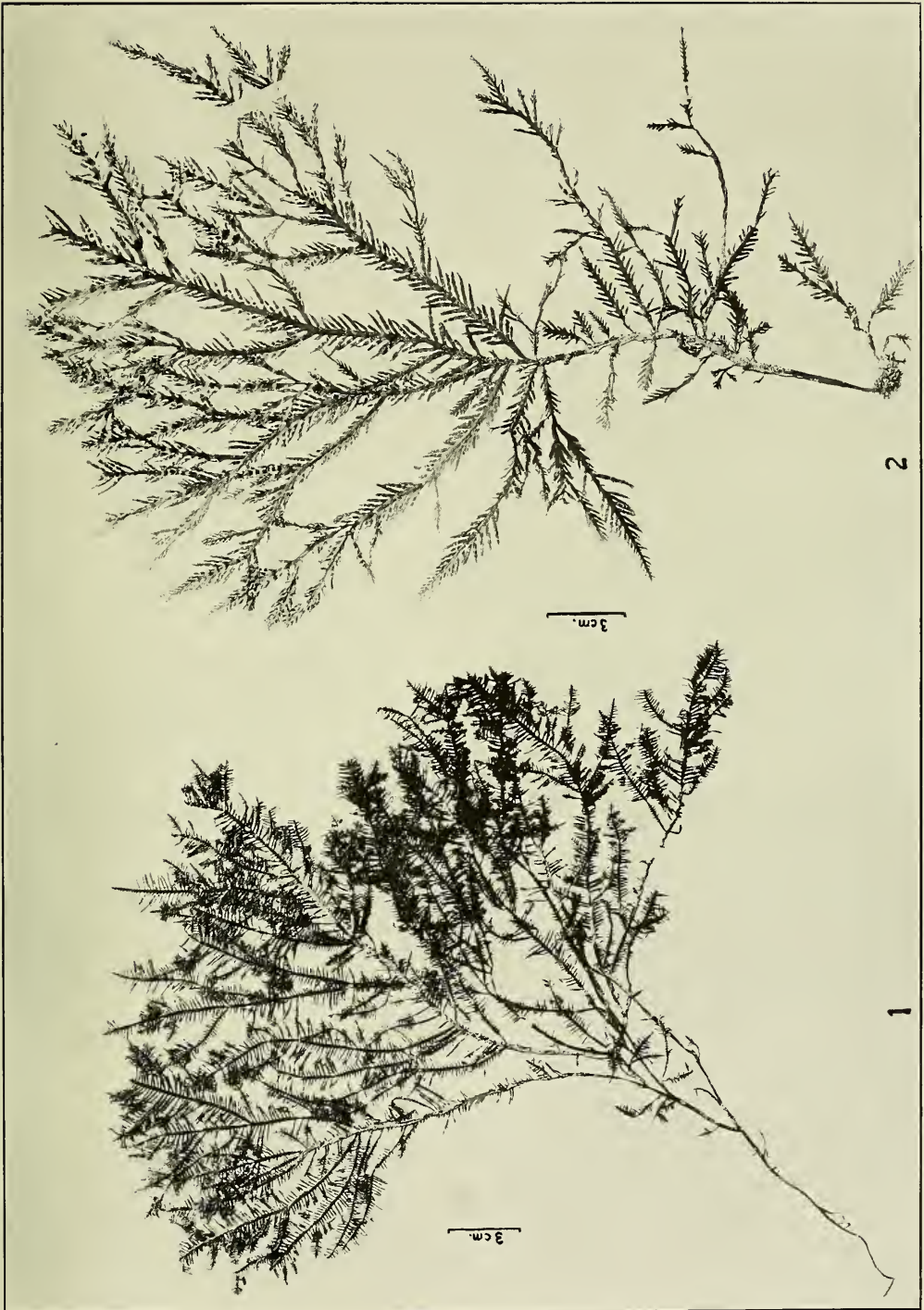
Ramenta lineari-cylindracea, 7-9 mm. longa, diametro circiter 3 mm., sessilia basi constricta, apicibus rotundis obtusissimis, glaberrima, obscure viridia.

Surculus continuus, terete, rather stout but not thicker than the rachides of the assimilators, of the thickness of a crow's quill, quite glabrous.

Assimilators erect to 17 cm. high, simple or once or twice forked, with a tendency to give off rooting branches, as is the case with *C. cactoides* and *C. Fergusonii*, the rachides about 3.5 mm. thick, glabrous, from the very base regularly annulate-constricted into segments as broad as long with rounded contours, bearing distichously pinnate ramenta.

Ramenta rising from just below the apex of each segment, geminate, linear-cylindrical, 7-9 mm. long, about as broad as the rachis, with round, blunt, scarcely dilated apices, constricted at the base, all conspicuously glabrous and dark green.

The species clearly belongs to the Section *Cactoideae*, with *C. cactoides*, *C. Hodgkinsoniae* from the Richmond River of northern New South Wales, Harvey's



Gelidium rectangulare, n. sp.

Pterocladia pectinata, n. sp.